

MOUT IS NOT MOOT

**A MONOGRAPH
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Air Defense**

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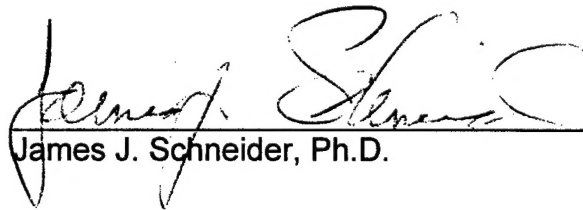
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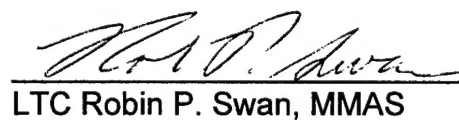
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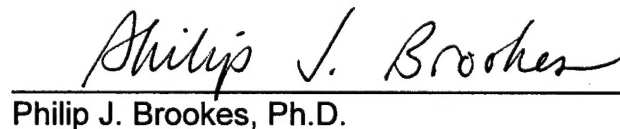
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ABSTRACT

MOUT is not MOOT!
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This monograph examines current MOUT initiatives and their potential impact on U.S. Army preparedness in future MOUT operations. The purpose of this examination was to determine if, "By the year 2005, the Army will have maximized the potential of current Army MOUT initiatives?"

The monograph uses the 1994 Defense Science Board (DSB) Task Force on MOBA as one of its primary sources. Additionally, the monograph has a historical review of recent MOUT operations that identified lessons learned. The three operations were: the U.S. 1989 Operation JUST CAUSE; the 1994 Russian operation in Grozny; and the 1993 UN Operation UNOSOM II in Mogadishu, Somalia. The 1994 recommendations of the DSB are examined against current MOUT ACTD technical solutions in order to evaluate the appropriateness of initiatives based on recent lessons learned.

The 1994 DSB Task Force also recommended that MOUT be treated as a system of systems. This monograph focuses on the following MOUT systems: technology, training, and doctrine. This monograph reviewed the current state of MOUT training facilities for quality, size, and ability to support combined arms operations. U.S. Army MOUT doctrine was reviewed with focus on the development of current MOUT doctrine and how it will support Joint Vision 2010 doctrine.

This study concluded that the technical initiatives being developed through the ACTD would provide U.S. Army soldiers with better MOUT equipment. However, MOUT training and MOUT doctrine are not being developed with the same resolution as MOUT technology and therefore the U.S. is not maximizing the potential of its current MOUT initiatives.

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Introduction

The genesis of many of the current Military Operations in Urban Terrain (MOUT) initiatives are traced back to the 1994 Defense Science Board (DSB) Task Force on Military Operations in Built-up Areas (MOBA). The task force was formed in response to a concern by congress for Department of Defense near-term capability in the area of MOBA. U.S. casualties during participation in UNOSOM II generated congressional concern. The DSB made many recommendations to improve U.S. MOBA capability. Some of these recommendations were never implemented, and others are reflected in the current MOUT initiatives.

It has been four years since the DSB task force on MOBA made its recommendations. Many resources and much effort are now being applied toward improving the Army's MOUT capabilities. To improve overall MOUT capability, the "systems" of doctrine, training, and technology (equipment) will need to be systematically upgraded. This monograph assesses how well MOUT is being developed as a single system, in particular, is MOUT training and MOUT doctrine being developed to the same extent as the technology initiatives? This monograph will address the question, "By the year 2005, will the Army have realized the maximum potential of current Army MOUT initiatives?"

To answer the question, this monograph draws upon three historical vignettes involving MOUT, which illustrates specific "lessons learned." Particular attention will be paid to lessons that were common to all three historical vignettes due to their obvious importance to the conduct of MOUT. These lessons serve to identify a "MOUT capability shortcoming" in terms of MOUT doctrine, MOUT training, or MOUT

technology. The next step is to assess the appropriateness of current MOUT initiatives to the identified shortcoming. The most difficult part of the question is whether the initiative will be fully implemented by 2005. Prior to presenting the lessons learned from the historical vignettes, the current state of each one of the MOUT systems will be examined. Additionally, the increasing importance of MOUT operations is also developed with respect to the aspect of global urbanization.

The current U.S. military doctrine is to avoid, when possible, operations in urban areas. This doctrinal propensity is understandable based on the historically lethal nature of combat in urban areas. The U.S. learned first hand the severe fighting conditions of MOUT in historic battles such as Manila, Aachen, and Seoul. More recently, the U.S. relearned these lessons while participating in Operation JUST CAUSE and the United Nations humanitarian relief mission in Somalia (UNOSOM II).

Although the stated U.S. doctrine is to avoid operations in urban environments, in the future accomplishing this will become increasingly difficult. First, the United States foreign policy, as the world's lone superpower, is one of seemingly endless "engagement." Secondly, UN sponsored Stability and Support Operations (SASO) are increasing and the U.S. is usually a major contributor in terms of armed forces to these operations. Finally, global urbanization is occurring at a phenomenal rate. By 2025, over three-fifths of the world's population will live in urban areas. Currently, the urbanization is predominately located in developing countries, but this is changing. Two out of three urban dwellers currently live in developed countries, but by 2015 three out of every four urban residents will be in a developing country.¹ The urban demographics for developing countries are particularly significant because of U.S. involvement in SASO in the 1990s

and into the twenty-first century.

This monograph uses the DSB's findings and data but will also reference lessons learned from the U.S.'s Operation JUST CAUSE and the Russian operation in Grozny, Chechnya. These two latter operations reflect MOUT operations with respect to conventional forces in a low to mid intensity spectrum of conflict. Although the Battle for Grozny did not involve U.S. forces, it is still applicable, due to the similarities between Russian and U.S. doctrine, tactics, and equipment concerning MOUT.

One of the 1994 recommendations of the MOBA task force was to create an Advanced Concepts Technology Demonstration (ACTD) for MOBA.² In 1996, a joint Army and Marine MOUT ACTD was begun with the objective of improving operational effectiveness through the integration of advanced technologies and the supporting tactics, techniques, and procedures. The MOUT ACTD initially identified forty operational requirements to be tested, but these forty were restructured to a final number of thirty-two requirements. Testing was begun in January of 1998 and will be completed by May of 1999. Any technologies that are successful during the ACTD will be supported for an additional two years.³ The ultimate success of the ACTD will not be determined until the Army and Marines are involved in a MOUT operation with time to train with the equipment developed during this ACTD.

The members of the task force on MOBA were correct in their assessment of the need to address MOUT as a single system. Technology, by itself, has never won a war and the same applies to the MOUT operations. Continuous, realistic training incorporating the successful ACTD initiatives is going to be required in order for the Army and Marines to maximize their potential in urban warfare. In support of the

ACTD technology initiatives, an increased focus on MOUT training is required.

Additionally, MOUT doctrine and TTPs must be updated with respect to both the new post-ACTD capabilities and the likely MOUT threat of the twenty-first century.

The MOUT ACTD is scheduled to be completed by 2001, with initiatives to be supported for an additional two years. These near-term actions, being undertaken to improve U.S. MOUT capabilities, must be made in concert with the Department of Defense's emerging doctrine. Joint Vision 2010 (JV2010), developed by the Chairman of the Joint Chiefs of Staff in 1996, was designed to provide the blueprint for developing U.S. military forces into the twenty-first century. JV2010 places a great reliance on technology and the ability of the U.S. to leverage such technology. The four core concepts of JV2010 are: dominant maneuver, precision engagement, full dimensional protection, and focused logistics, thus, the following questions emerge: to what extent do these core concepts apply to MOUT? Is MOUT doctrine being developed that will be compatible with these JV2010 concepts?

Urbanization

The world's population is growing at a fast rate. This fact, itself, is not important to the military; where this growth is occurring must be factored in. The growth is occurring in urban areas and in developing countries. In 1700, fewer than two percent of the world's population lived in urban areas. By 1900, this percentage had risen to fifteen percent and by 1950, twenty-five percent.⁴ The UN estimates that by 2005, half of the world's population will live in urban areas. By 2025, over three-fifths of the world's population will live in urban areas (figure 1).

Urbanization Over Time

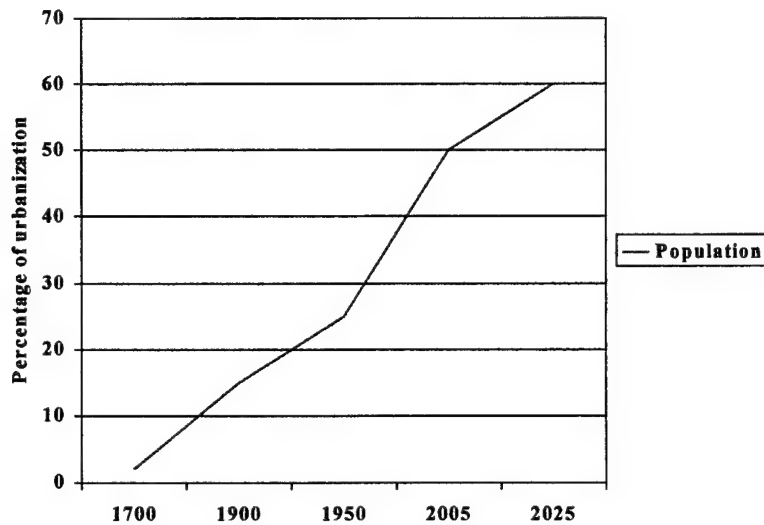


Fig.1 Percent of urban population compared to total population over time.

Currently, the urbanization is predominately located in developing countries, but this is changing. Two out of three urban dwellers currently live in developed countries, but by 2015 three out of every four urban residents will be in a developing country.⁵

Specifically, where is this urbanization occurring? Asia is projected to be developing the largest urban populations. By 2010, Asia's share of the world's fifteen largest cities will grow from nine to eleven, with Tokyo, Bombay, and Shanghai comprising the three largest urban areas in the world.⁶ By 2010, thirteen of the top fifteen cities will be in developing regions.⁷ Every regional U.S. unified command should be concerned because each one of them encompasses large urban areas located in developing countries that would pose significant military problems should conflict arise (figure 2). What kinds of situations could manifest themselves in developing countries that would be considered of "viable national interest," to the United States?

SOUTHCOM

male is the fuel for urban disorder.⁹

1994 Defense Science Board Task Force on MOBA

After the disastrous results of the 1993 Task Force Ranger raid to capture Somali militia leader Mohamed Farah Aideed, the United States Department of Defense reevaluated its capabilities in operating in the urban environment. A Defense Science Board (DSB) Task Force on Military Operations in Built-up Areas (MOBA) was formed to address shortcomings and to come up with solutions. The task force focused on modernization initiatives that would maximize the Department of Defense's current capability to conduct military operations in built-up areas. The conclusions of the task force were:¹⁰ the task force identified the need to address MOBA as a single system consisting of training, a testbase, urban databases, a champion, and technological innovations (figure 3). The task force used lessons learned in Somalia and input from CINCs as their primary source of data during their proceedings.¹¹

CONCLUSIONS

- MOBA provides an extremely difficult environment that requires a full range of integrated systems and should be a key consideration for future material research and acquisition.
- Dramatic improvements in the effectiveness of MOBA can be achieved by integrating existing and new technologies under appropriate operational doctrine developed explicitly for MOBA.
- Technology already exists or could be developed rapidly, that can fill important requirements in MOBA.
- MOBA needs to be regarded as a single system.
- The MOBA system also involves the establishment of urban databases, analysis centers, a test bed, and a champion.

The DSB developed the following MOBA system¹²

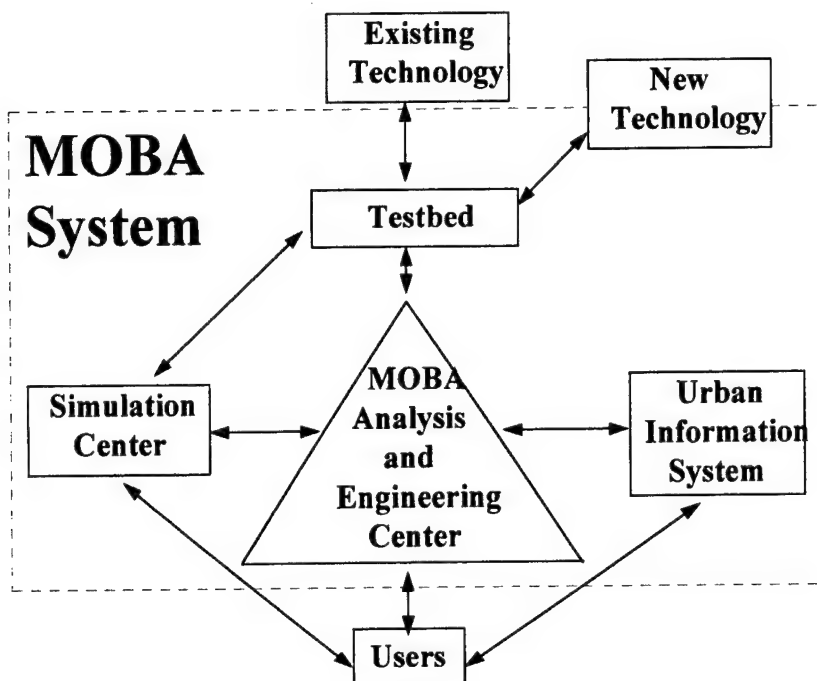


Fig. 3. Defense Science Board's MOBA system.

The DSB MOBA study was an extensive and thorough examination of MOUT capabilities and identification of needed capabilities. Since 1994, the Army has begun acting upon certain recommendations of the MOBA study.¹³

RECOMMENDATIONS

Recommendation #1: Secretary of Defense approves the concept of MOBA as a system

Recommendation #2: Designate ACOM to be in charge of MOBA as a system

Recommendation #3: Direct development of an Urban Information System characterizing relevant urban areas worldwide

Recommendation #4: Instruct the JCS to create a MOBA Analysis Center (including capability for strategic analysis and systems integration)

Recommendation #5: Task the Army to be the lead agency to institute a Testbed (to enable evaluation of technology concepts); other services to support as required

Recommendation #6: Direct JCS to expand Joint Warfare Center (Collocated with ACOM) into a MOBA Simulation Center (including constructive, live, virtual simulation)

Recommendation #7: Establish a MOBA ACTD (with ACOM and SOCOM as sponsors and ARPA as developer)

The MOUT technology improvements were to be developed from the establishment of a MOBA ACTD. The MOUT training system was to benefit from the establishment of a MOBA Simulation Center (Recommendation #6) but as of this date this simulation center has yet to be established. The implementation of recommendation #5 (MOUT Testbed) in conjunction with the MOBA Simulation Center would have given the individuals responsible for developing MOUT doctrine some tools and data to work with.

A historical review of recent operations involving operations in an urban environment serve to identify a "MOUT capability shortcoming" in terms of MOUT doctrine, MOUT training, or MOUT technology. This review serve as the basis for determining the appropriateness of recent MOUT lessons learned compared to the 1997 MOUT ACTD initiatives.

Historical Review

There are three recent historical examples that are referred to throughout the monograph; they contain many of the complexities associated with operations conducted in and around an urban environment. The complexities apply to the entire spectrum of conflict from major conventional warfare to stability and support operations. They are the 1994 Battle of Grozny; although non-US, it involved large-scale use of conventional forces by both belligerents. It is also applicable because Russian MOUT doctrine is similar to US MOUT doctrine. The 1989 Operation Just Cause conducted in and around

Panama City represents a limited US operation to restore democracy to that country.

Finally, the 1993 U.S. involvement in United Nations Operations in Somalia (UNOSOM II) in Mogadishu, Somalia that led to the unsuccessful attempt to capture Mohamed Farah Aideed.

Grozny

The Russian republic of Chechnya began its break from Russia in August of 1991. Dzhokhar Dudayev established himself as the leader of the Chechen rebels calling for an independent Chechnya. From 1991 to 1994, a guerrilla war was conducted between Russian security forces and Chechen forces. After this unsuccessful attempt to unseat Dudayev, the Russian military was called upon.¹⁴ Russian doctrine, as well as U.S., calls for urban areas to be avoided when possible. If this is not feasible, then the urban areas are to be sealed off and reduced by follow-on forces. The operational decisive point for the Chechen rebels was the city of Grozny, which was also the capital of Chechnya.

In December of 1994 the Russians began a three-pronged attack from the east, north and west converging on Grozny. The Chechen strategy called for the use of concentric rings of increasing resistance as Russian forces approached Grozny. The first ring relied on civilian resistance to harass the Russian columns as they advanced. The second ring was approximately 20-30 kilometers from Grozny and featured assaults on Russian positions. The third and fourth rings were the city of Grozny itself. Here the Chechens would put up the stiffest resistance.¹⁵

Nearly 15,000 Chechen regular troops and another 30,000 to 40,000 paramilitaries, 50 tanks, 100 APCs/IFVs, and 100 artillery pieces defended Grozny. The Russians moved in with 23,800 men, 80 tanks, 208 APC/IFVs and 182 artillery pieces.

Later, reinforcements were added to these numbers to bring them up to 38,000 men, 230 tanks, 454 APC/IFVs, and 388 artillery pieces. The force ratio for the attacking Russian forces was a mere 0.5 : 1 initially and later 0.8 : 1.¹⁶ These force ratios are nowhere near the 6 : 1 ratio required of any force attacking a well prepared defender in an urban environment.

The Russian forces that led the assault on Grozny had no formal MOUT training. These included both the maneuver forces and the airborne forces. The Russian forces had very few guides, and there was a shortage of maps with the proper scale or level of detail required for urban navigation. Russian forces were often misoriented leading to fratricide, or to finding themselves being ambushed due to a dead end street.¹⁷ The first major ground attack against Grozny centered on the capture of the presidential palace occurred during daylight hours 31 December, 1994. Tanks that Chechen forces allowed to penetrate into the city led Russian forces. The tanks could not maneuver in the city and the Chechens encircled the tanks and destroyed approximately 150 tanks and APC/IFVs. There was no dismounted infantry support for the tanks to counter Chechen tactics.^{17a}

By early January, the Russian military leaders were beginning to realize the complexities of urban warfare. There was reorganization into Joint Groupings of Federal Forces. These forces took a more deliberate approach in securing the city. Attention was given to flank security and clearing all structures. Infantry – armor groups were formed instead of the vulnerable pure armor formations. Sniper teams were employed to reduce the Chechen freedom of movement. Remotely piloted vehicles (RPVs) were used to gather intelligence utilized by both the artillery and helicopter assets. All of these

measures contributed to a dramatic decrease in Russian casualties. The center of Grozny was finally taken on 19 January 1995.¹⁸ Between the 20th and 26th of January control of Grozny was handed over to the Minister of Internal Affairs (MVD). The MVD was responsible for reestablishing law and order in Grozny. It should be noted that isolated pockets of Chechen resistance were not eliminated in Grozny until 26 February.¹⁹

Operation JUST CAUSE-PANAMA

Operation JUST CAUSE was undertaken with the following campaign objectives: protect U.S. lives and key sites and facilities; capture and deliver Noriega to competent authority; neutralize PDF forces; support establishment of U.S. recognized government; and restructure Panamanian Defense Forces (PDF).²⁰ There were several events that led up to the 20 December 1989 U.S. Operation JUST CAUSE.

Tension between the Noriega led Panamanian government and the U.S. had been escalating since 1988. Manuel Noriega was indicted on U.S. drug charges in February of 1988. On 28 February 1998 the JCS ordered SOUTHCOM to begin planning the use of U.S. forces against the PDF. After agreeing to abide by the results of the Panamanian general election, Noriega invalidated the results of Panamanian elections in May of 1989. This led to President Bush increasing U.S. troop strength in Panama by 1,900 additional soldiers. On 15 December 1989, Manuel Noriega declared himself supreme leader of Panama and declared a state of war with the U.S.²¹ On 16 December 1989, Marine Lieutenant Robert Paz was killed by PDF forces. There was also a separate incident of a Navy Lieutenant and his wife being detained and accosted by PDF forces. President Bush gave the order to execute Operation JUST CAUSE on 17 December 1988.

The U.S. Joint Task Force headquarters for Operation JUST CAUSE was the

XVIIIth Airborne Corps. Major subordinate Army units that participated in the operation included: the 82d Airborne Div. and 7th ID (L) (-) (TF Pacific); 3d Bde/7th ID (TF Atlantic); 193d INF Bde (TF Bayonet); 75th Ranger Regt and 7th SF GRP and SOCSOUTH (Joint Special Operations Task Force); 7th Aviation Bde (-) (TF Aviation). There was additional combat support and combat service support units that were also key and instrumental in the operation's success.

The operational plan called for the simultaneous attack on twenty-seven Panamanian objectives to overwhelm swiftly the PDF.²² On D-day, the Rangers and 82d jumped in to secure Panamanian airports. This allowed follow-on forces to begin to flow in. Simultaneously, the 193d INF Bde was isolating the Commandancia, Noriega's political headquarters, as well as seizing the PDF barracks at Ft. Amador. The 3d Bde/7th ID (-) attacked the Panamanian naval facilities at Coco Solo and the port city of Colon. All D-day objectives had been secured by the end of the first day. Civil-Military operations (CMO) began on the second day in and around Panama City. A transition to localized support and stability operations was begun as soon as Panamanian resistance was neutralized. On D+4, Manuel Noriega fled to the Papal Nunciatura to seek sanctuary and would eventually surrender to U.S. forces ten days later. Operation JUST CAUSE was terminated on 12 January and Operation PROMOTE LIBERTY was begun.²³

Operation JUST CAUSE was a political and military success, but it was not without a cost. There were twenty-three U.S. killed and 324 U.S. wounded and 202 Panamanian civilians wounded and ten thousand left homeless.²⁴

UNOSOM II

By 1992, the political structure of Somalia had collapsed. The country quickly

reverted to its natural clan social structure. The competing clans did not have the wherewithal to organize peacefully and govern a modern nation state. The result was a country in complete chaos where political assassinations, looting, rioting, and starvation were common. These problems were first noticed by international non-governmental organizations that brought them to the attention of the United Nations.

The U.S. involvement in Somalia began in 1992 as a member of a United Nations' Task Force (UNITAF) of Operation RESTORE HOPE whose mission was to provide humanitarian assistance to the people of Somalia. On 4 May 1993 UNOSOM II replaced UNITAF. On 5 June 1993, forces loyal to Somali militia leader Mohamed Farah Aideed ambushed twenty-four Pakistani soldiers. The operational pace began to increase for U.S. soldiers as the number of peace enforcement operations and the Quick Reaction Forces were increasing. Finally, in response to increased concern about U.S. casualties, Task Force Ranger was deployed in August.²⁵ Through the course of the operation, the mission of U.S. forces began to take on a more conventional military mission. Specifically, the capture the Somali militia leader Mohamed Farah Aideed became the operational focus of Task Force Ranger.

Acting on intelligence, on the afternoon of October 3rd Task Force Ranger conducted a raid with the objective of capturing Aideed and some of his lieutenants.²⁶ The Task Force plan called for a helicopter assault on the Mogadishu hotel where Aideed was meeting. A ground convoy was to link up with the helicopter assault force at the hotel and extricate the assault force and the captives.

The surprise assault on the hotel was successful with no U.S. casualties and included the capture of approximately 24 Somalis.²⁷ The Somali militiamen were lead by

Colonel Ali Aden. Colonel Aden had organized his militiamen to respond quickly to just such an operation involving U.S. helicopters. The Somalis, dressed in native clothing, and moving quickly, were able to respond to the U.S. assault in 40 minutes. The Somali's were able to bring down two U.S. helicopters with rocket propelled grenades (RPGs).²⁸ The downing of these helicopters caused Task Force Ranger to fight their way to each crash site and once there, secure them. The Rangers were not prepared to fight their way any significant distance from the objective. They did not have the proper equipment and had not planned or rehearsed such an operation. The Somalis turned the crash sites into "kill zones" by continually pouring reinforcements into the action.

A coordinated rescue effort was launched from the Task Force base at around 2300 hours. The rescue effort was led by the 10th Mountain Division QRF and was accompanied with Pakistani and Malaysian armor.²⁹ The reaction force was able fight its way to the crash site and extract the pinned down U.S. forces. The entire operation lasted almost 16 hours and resulted in 16 U.S. soldiers being killed and 64 wounded.³⁰

The unsuccessful attempt to capture Mohamed Aideed and its disastrous results proved to be the political culmination point for the newly elected Clinton administration. On 6 October 1993, the Clinton administration announced that U.S. forces would be pulled out of Somali within six months.³¹

MOUT ACTD Analysis

The 1994 DSB Task Force solicited Lessons Learned from both the JTF Somalia and 10th Mountain Division with respect to MOBA operations in Somalia. Additionally, the Task Force received CINC requirements for MOBA operations. These Lessons Learned were then identified as potential MOUT ACTD operational requirements.

Additionally, applicability of the operational requirement was also traced back to Operation JUST CAUSE and the Russian operation in Grozny, Chechnya. Five of the thirty-four ACTD requirements are discussed in detail below in the following format: General requirement; historical significance (lesson learned); specific ACTD requirement; requirement status. All thirty-four ACTD requirements and the current experimentation schedule and testing results are presented in Appendix One.

1. Produce/Update Maps

One of the identified requirements of MOUT operations is the ability locally to produce or update maps. Due to the detailed planning of MOUT operations small-scale maps, at least 1:25000 are required. Current photo imagery of MOUT areas of operations provides accurate information on vegetation, new structures, and power lines/antennas.

During Operation JUST CAUSE, Ft. Ord infantry units were fortunate enough to be operating off of 1:7,500 scale for some parts of Panama City. At this scale individual buildings and streets are identifiable on the map, but even this scale is not always enough. Individual leaders would often create their own sketches out of cardboard cases from MREs (meals ready to eat).³²

In Somalia, like most third world countries, street signs and building names are often non-existent. During the 3-4 October raid in Mogadishu, ground commanders became misoriented during the operation. The lack of maps or imagery containing current graphics or reference grids was a contributing cause.

In Grozny, the Russians did their initial planning on 1:50,000 or 1:100,000 scale maps. The maps of larger scale were not available for the operation. Additionally, the critical resource of aerial photographs were not available for the ground commander to

use in his planning.³³

The CINCs identified the following requirement as part of the 1994 DSB MOBA study, "real-time mapping facility to quickly reflect changes in urban landscape and assist navigation)."³⁴ In 1997, the Army MOUT ACTD identified the same operational requirement to produce/update maps,

R4: Produce/Update Maps - The ability to produce maps (complete with gridlines) which are updated and accurate (based on some form of aerial imagery) and distribute down to at least squad level within 6-12 hours of notification. Ideally 1:25,000 scale or smaller, but as a minimum 1:50,000 scale. Maps should be produced using common datum for joint environments and be updated, GPS-true maps and geographical information.

STATUS: The R4 initiative will be tested during Marine Corps experiment 4 to be conducted 1 - 30 April 1999.

2. Powered Optics for Small Arms

In MOUT operations there is a definite need for an increased capability in terms of better illumination or magnification. This increase in capability would greatly enhance the soldier in target discrimination thereby reducing both fratricide and collateral damage. There are some commercial optics that are utilized by some Army units in limited quantity (TACLIGHTS, Aimpoint 3000, etc.) but are not optimized for MOUT use or possibly not developed for use by all MOUT weapons.

During Operation JUST CAUSE infantryman developed a field expedient method of increasing illumination while clearing rooms. The infantryman would simply tape a flashlight to the M16 barrel.³⁵ Although practical and inexpensive this method can definitely be improved upon.

In Somalia, modular add-ons to the M16 produced good results in both day and night conditions.³⁶ It should be noted that the predominance of soldiers involved in the 3 October 1993 (Aideed raid) were special operations soldiers.

The Russians did not make use of powered optics during the battle of Grozny. They did use tank searchlights and dismounted searchlights to degrade the effectiveness of Chechyn night vision devices. This use of searchlights also produced a demoralizing psychological effect on the Chechens.³⁷

The 1994 DSB study also recognized the need for improvement in this area. Specifically the CINCs identified the need for “small thermal sights for individual weapons” and “improved night vision devices not degraded by illumination” The Army ACTD program also recognized the operational requirement for better optics:

R2: Powered Optics: A powered optic (Day/Night) for all types of individual and crew served weapons. Optic must add depth perception at night but not interfere with CQB tactics.

STATUS: The R2 experiment will take place as part of Marine Corps Experiment 3 scheduled for 1-30 January 1999.

3. Improved Vehicle Protection

One of the greatest threats to the soldier in the MOUT environment is the possibility of small arms ambush or detonating a land mine while traveling in a light wheel convoy. Ballistic blankets are available in “contingency quantities” that provide limited mine protection for HUMMWVs and 5-ton trucks. Recent advances in lightweight ceramics and high tensile strength fabrics have made it possible to increase the protection to existing vehicles through add on kits. Protection from mines, 50 cal machine gun fire, and artillery fire is still considered to be a real challenge. The Defense Science Board assessed increased vehicle protection as difficult but obtainable in terms of a near term solution.³⁸

During a routine patrol in Mogadishu, four American soldiers were killed when

their HUMMWV was destroyed by a command-detonated mine. Of the coalition forces participating in UNISOM II the South African and Zimbabwe vehicles, although awkward, provided the most protection from land mines.³⁹

During Operation Just Cause and in Somalia, the use of "sandbagging" vehicles both HUMMWVs and M113s was a standard practice. This use of sandbags offered increased protection from small arms fire and increased the survivability of vehicles. Sandbags also provided limited protection from RPGs.⁴⁰ Unfortunately, not all HUMMWVs are designed for the increased weight of sandbags and this additional weight causes structural fatigue problems for the HUMMWV. In Somalia a HUMMWV may contain as many as sixty sandbags at 35-40 pounds per sandbag. This amounted to as much as 2100-2400 pounds of additional weight causing brake and suspensions to wear out quickly.⁴¹

The Russians encountered a similar problem to small arms ambushes and land mines in Grozny. The Chechen rebels had mastered the street ambush using their weapon of choice, the RPG-7. To counter these highly successful RPG-7 attacks the Russians began wrapping their vehicles with a cage of wire mesh approximately 25 to 30 centimeters from the vehicle. This defeated the shaped charge of the RPG-7 as well as protected the vehicle from Molotov cocktails and antitank grenades.⁴²

STATUS: The operational requirement for increased vehicle protection was not even identified by the MOUT ACTD. The closest ACTD initiative to increased vehicle protection would be R22 (a small, light armored vehicle with heavy gun). The need for a small, light armored vehicle with heavy gun was considered but categorized as a requirement needing further study to determine validity as a MOUT ACTD requirement. It appears that sandbagging of vehicles will continue to be the solution to land mines and small arms ambushes.

4. Door and Window Breaching Devices

During the assault of the Renancer Prison, Operation JUST CAUSE, members of the 3-504th Parachute Infantry Regiment (PIR) encountered many concrete walls, steel doors, and iron bars. Due to the necessity of time and combat conditions, the soldiers tried to breach these obstacles with their organic weapons.⁴³ The use of these organic weapons proved less than satisfactory. Specifically, the claymore mine proved incapable of breaching some concrete walls.⁴⁴

In 1994 DSB study considered door and window breaching devices as technologically difficult but achievable within the near term. The MOUT ACTD developed two similar breaching initiatives specifically R27: Man-sized hole and R30: Non-explosive breach.

R27: Blow man-sized hole in concrete. A small fast way, to blow a man-sized hole in any direction (up, down, sideways) through concrete walls. Needs to be modular, simple kit or round, which is easily trained and understood.

STATUS: R27 is scheduled as part of the Army experiment to be conducted on 1-21 November 1998.

R30: Door/Window Breach. Non-explosive breach capability to force open doors windows, and locks need both a quick, quiet/stealth solution and a quick shoot-through solution.

STATUS: R30 was tested on 2 May 1988 as part of MOUT ACTD Marine Corps experiment 1. The Rafael Dimon Breaching launcher system was the clear winner. It was able to breach doors and windows from a distance of 40 meters. The HydraRam hydraulic doorjamb spreader that weighs 11 pounds and exerts 10,000 pounds of pressure was successful in breaching most doors.

5. Non-lethal weapons

Of all the MOUT ACTD initiatives the non-lethal weapons seem to garner the most attention from congressman to soldier. The use of non-lethal measures is nothing new to the U.S. Army or U.S. law enforcement agencies. Law enforcement agencies are often more likely to develop or implement crowd control non-lethals than the U.S. Army.

Non-lethal weapons have seen wide spread use in many operations other than war to include both Operation JUST CAUSE and Somalia.

In Somalia, U.S. soldiers were equipped with various non-lethal weapons to include CS grenades, clubs, pepper spray, and concussion grenades. These weapons did not assist the soldiers in handling large unruly crowds due to their short duration or small impact area.⁴⁵ None of the current MOUT initiatives are being developed to handle large crowds.

During Operation JUST CAUSE, one of the most effective non-lethal weapons was the use of the military working dog. On more than one occasion dogs were able to gain control of situations and prevented the use of lethal weapons.

The 1994 DSB MOBA study recognized the potential for the use of non-lethal especially in the area of operations other than war. It identified numerous technologies available 1994 and grouped them into the major topics of kinetics, directed energy; chemical, entanglement/envelopment, and rapid barriers.⁴⁶ The 1997 MOUT ACTD developed three separate non-lethal initiatives. The non-lethal blunt training round was discussed in the training portion of this paper. Non-lethal tools/munitions, as well as non-lethal grenades, are separate operational requirements.

R25: Non-lethal tools/munitions: A family (various ranges, effects, etc.) of non-lethal tool/munitions.

STATUS: R25: Is not currently scheduled to be tested, even though it was the number two ranked operation requirement by MOUT users.

R34: Non-lethal grenade: A grenade, which will incapacitate enemy personnel inside a room but not send lethal fragments through thin, adjoining walls. Need to identify a non-lethal grenade for unknown situations (mix of enemy neutral personnel and incapacitating round where non-lethal is not a requirement).

STATUS: R34: was conducted as part of Marine Corps experiment #2 from 3-28 August 1998. The results of the experiment have not been released.

6□ Snipers

The use of snipers in MOUT operations is a proven combat multiplier. During U.S. operations in support of UNOSOM II, Special Operation Forces were able to reduce greatly the transport of crew-served weapons.⁴⁷ Snipers were also used in an effective economy of force role during Operation JUST CAUSE. Snipers were positioned in order to free troops for patrolling and to clear buildings.⁴⁸ In the aftermath of Grozny, the Russians stated that "trained snipers were essential, but in short supply."⁴⁹

There are two issues pertinent to the increased use of snipers in MOUT, the first being there is no positions for snipers in infantry TO&Es. The need for snipers is handled in a case by case basis. This ad hoc system seems less and less viable based on the likelihood of increased MOUT operations in the future. It would also seem that the unit's effectiveness would also increase with permanent, fully trained, and integrated snipers into the unit on a full-time basis.

The second issue pertinent to the use of snipers in MOUT is that of equipping the sniper. The Special Operation Forces utilize the "arms room concept" which offers their snipers a full suite of weapons to choose from. The suite offers a full range of rifles, laser rangefinders, and other optics.

STATUS: The MOUT ACTD did not identify a specific operational requirement that would increase sniper effectiveness. Both of the issues identified above with snipers can be resolved with modifications to existing infantry unit TO&Es.

Training

To maximize the effect of current MOUT initiatives the current MOUT training system should be developed in concert with MOUT initiatives taking place in technology

and doctrine. In general, the current U.S. MOUT training does not accurately reflect the environment of urban warfare.

7. Training Round

According to the lessons learned from UNISOM II in Somalia, "Army MOUT sites for live-fire training do not sufficiently replicate the realism found in peace enforcement operations or combat."⁵⁰ The 1994 DSB on MOBA explicitly stated a need for improved MOUT training facilities with live-fire "shooting houses."⁵¹ The specific MOUT ACTD operational requirement that could potentially have the greatest impact in adding realism to MOUT training is the non-lethal blunt training round.

R31: Non-lethal blunt training round: A safe non-lethal, blunt impact training munition primarily for use in MOUT environments which can be fired from existing weapon platforms (M16, SAW, 9mm, M60)

STATUS: R31: the non-lethal blunt training round was successfully experimented during Army experiment #1 conducted on 13 February 1998. The blunt training round dramatically increased the realism of MOUT training. The blunt training round will be incorporated into the remainder of ACTD experiments.

The experimentation for the MOUT ACTD is being conducted at two sites: McKenna MOUT site, Ft Benning, Georgia; and USMC Collective Training Facility, Camp Lejeune, NC. Both of the sites are being upgraded in terms of instrumentation to help record the findings of the experimentation process. This instrumentation includes: audio and video recording of individual rooms, soldier location (x,y,z coordinates), fratricide recording, and time tagging of all events in real time. The instrumentation will allow evaluators to better access the effectiveness of the technologies being examined.⁵²

One of the most costly resources is the development of realistic MOUT training facilities. After many decades of neglect and deterioration, the U.S. is currently modernizing many of its MOUT facilities which will increase up to a certain point, the

MOUT effectiveness of those tenant units. The facilities are currently being designed to handle a battalion size task force. This size force does encompass the squad level operations still projected to be the primary fighting unit of urban operations. It does not encompass the operational difficulties of integrating combined arms operations or joint forces. Inherent in large urban area operations, will be the concurrent security and stability operations (SASO). Small training facilities do not allow for the concurrent training of conventional operations and SASO.

What should be the MOUT training facility requirements for U.S. forces be to support initially AOE forces and Force XXI forces? At a minimum, the individual installation MOUT facility has to be large enough to fully integrate combined arms operations tailored to the units available to train at the installation. Currently, most MOUT sites are not constructed to handle the weight, or size, of the Abrams tank or Bradley Fighting Vehicles. This prohibits the integration of combined arms operations that are crucial for successful MOUT operations. Secondly, the lack of maneuver training in MOUT facilities reinforces the idea that MOUT is purely a dismounted operation. The MOUT site should be flexible enough to be reconfigured to handle mission specific training requirements. The MOUT site should also be fully instrumented to facilitate the training feedback and help in the assessment of new technology weapons. Instrumentation has to be balanced with the need for partial destruction capability within the MOUT site. There are specific minimum infrastructure requirements the training facilities should possess: airstrip within close proximity, numerous buildings able to hold helicopter landings, extensive sewer network, high rise buildings, and defined communication buildings. Additional MOUT facilities could

include: water treatment facility and water tanks, radio towers, railyards, cemeteries and churches, parks, and small bodies of water.

There also exists the need for an Urban Warfare Training Center (UWTC) where units will come to train periodically. This UWTC will be organized and administered along the same lines as the highly successful Combat Training Centers in use today. The UWTC will place joint forces and non-governmental agencies into challenging scenarios. Similar to the other CTCs, professional diverse and skilled threat forces will await the visiting friendly force. The installation MOUT facilities will be complimentary in instrumentation and training standards to that of the UWTC.

A look at a few of the existing MOUT facilities provides insight to the current capabilities of MOUT facilities:

1. Ft. Benning.

The McKenna MOUT site at Ft. Benning is comprised of 15 buildings three of which can support helicopter landings, 350 feet of tunnels, a tactical airstrip, and a large pond. Additional features such as a cemetery, open-air market, and airfield control tower are being planned.

2. Camp Lejeune.

The USMC MOUT site at Camp Lejeune is made up of 31 buildings two of which can support helicopter landings, 120 feet of tunnel network, and pre-rubble buildings.⁵³

3. Ft. Knox.

In June of 1999, a new urban-warfare training center will be completed in Ft. Knox, Kentucky. The complex will consist of 21 structures. Other features of the site include: a movable train; a bridge that can turn sideways and emit smoke; a two-story hotel with 30 rooms and elevator; a working television station; and the cite capability to blow-out roofs and ceilings.⁵⁴ The Ft. Knox facility will be able to support tank and AFVs throughout the MOUT site. The AAR capabilities will marry those of the major combat training centers (CTCs) to include video, audio recordings, observer/controller observations and a take home packet complete with

training data.⁵⁵

4. Ft. Polk.

The Ft Polk JRTC MOUT facility consists of three facilities. These facilities are the Self-Airfield, Shughart-Gordon village, and Word Military Compound. The facilities are being developed in two phases. Phase I was completed in August of 1996 and Phase II began in 1997 and is scheduled for completion in 2001.

Self-Airfield consists of a six building complex. The airfield can support C130 or C17 aircraft. It contains one and two story structures with blowholes for forced entry.

Shughart-Gordon village is approximately 3.5 miles from Self airfield. The facility consists of 27 multi-story buildings one of which is helicopter landing capable. A tunnel system connects various buildings in the village. The village is also capable of handling tanks and AFVs.

The Word Military Compound is located 900 meters south of the Shughart-Gordon village. An 8-foot security fence with 4 guard towers surrounds two barracks, a stockade, headquarters building, and parade field. The parade field can support helicopter landings.⁵⁶

An alternative to modernizing existing MOUT facilities or new construction is the use of facilities closed or pending closure from BRAC actions. This is not a new idea, it was mentioned in the 1994 DSB MOBA study as a potential use. Many of the installations are not commercially attractive to private interests or the environmental clean-up costs are prohibitive. These installations offer the size and infrastructure needed for realistic MOUT training.⁵⁷

How does one train joint forces to operate successfully in a complex terrain environment at the operational level of warfare? Currently, it is probably feasible only through the use of models and simulation. Unfortunately, there has been little resources or manpower expended in the development of models specifically developed for the urban terrain environment. Both training simulations and analytical models need to be developed to support any specialized MOUT forces, or doctrine, that is developed.

One training concept that has been developed recently is the combining of live

unit training with training simulators and simulated wargames. This unique concept of combining three training environments could easily be applied to the MOUT environment. All three training environments exist today separately but have not been linked so far in the MOUT environment.

Doctrine

There seems to be an ambiguity on the definition of “military operations in urban terrain” depending on the service and the extent of urbanization in the particular conflict.

Joint None JP 1-02

Army MOUT include all military actions that are planned and conducted on a terrain complex where manmade construction impacts on the tactical options available to the commander. FM 90-10 & FM 90-10-1

Marines MOUT include all military actions that are planned and conducted on a topographical complex and its adjacent natural terrain where manmade construction is the dominant feature. It includes combat in cities, which that portion of MOUT involving house-to-house and street-by-street fighting in towns and cities. MCWP 3-53.3

The Army has developed two non-doctrinal terms that are descriptive in nature but provide clarity for the commander and planner. These two descriptive terms are “surgical MOUT operations” and “precision MOUT operations.” These two terms are under utilized when describing potential operations in military operations other than war (MOOTW) environment (figure 4). Currently, these terms can only be found in FM 90-10-1.

Surgical MOUT: these operations are usually conducted by joint special operation forces. They include missions such as raids, recovery operation, rescues, and other special operations. FM 90-10-1

Precision MOUT: conventional forces conduct these operations to defeat an enemy that is mixed with noncombatants. They conduct these operations carefully to limit noncombatant casualties and collateral damage. Precision MOUT requires strict accountability of individual and unit actions through strict ROE. It also requires specific

tactics, techniques, and procedures for precise use of combat power. FM 90-10-1

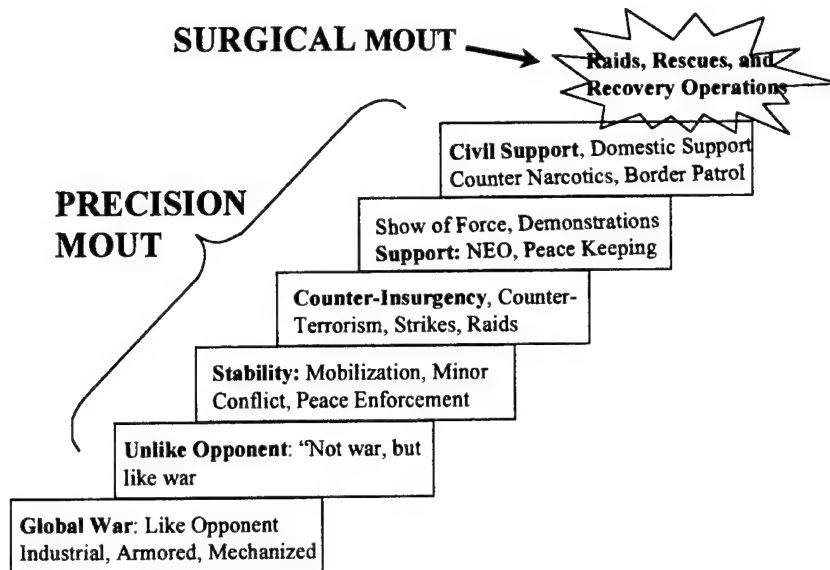


Fig. 4. Illustrates applications of potential Precision MOUT and Surgical MOUT

These terms though non-doctrinal would offer clarity when trying to apply MOUT operations.

Joint Vision 2010 (JV2010), developed by the Chairman of the Joint Chiefs of Staff in 1996, was designed to provide the blueprint for developing U.S. military forces into the twenty-first Century. JV2010 places a great reliance on technology, and the ability of the U.S. to leverage such technology. The four core concepts of JV2010 are: dominant maneuver, precision engagement, full dimensional protection, and focused logistics (figure 5).

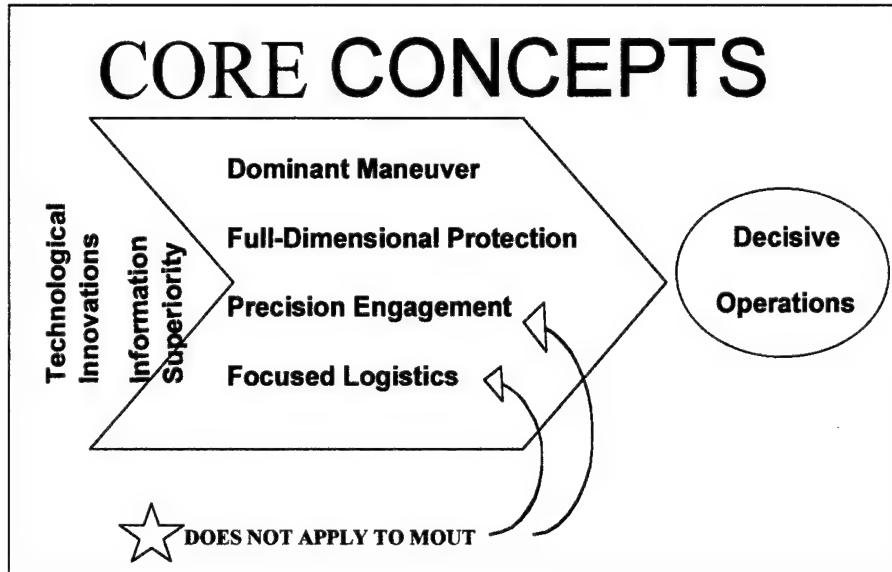


Fig. 5. JV2010 Core Concepts and how they apply to MOUT

How do these four core concepts apply to MOUT? The answer is, “not very well.” According to the JCS Concept for Future Joint Operations, only two of the concepts apply to MOUT these are dominant maneuver and full-dimension protection. Precision engagement provides some support and focused logistics hardly any.⁵⁸ In light of the likelihood and potential seriousness of urban warfare, these core concepts should be reexamined. More importantly, hardly any serious doctrine work has been done at the operational level of war in the MOUT environment. FM 90-10 Military Operations in Urban Terrain (MOUT) published in 1979 is currently being revised. FM 90-10 is responsible for MOUT operations at the brigade level and above. The complexities of the MOUT environment are such that doctrine that applies to military operations in open terrain (MOOT) will not always be complimentary. The new FM 90-10 needs to be written in concert with JV2010 concepts.

The emerging FM90-10 doctrine identifies three components to MOUT execution

inherent in all MOUT undertakings. Those three components are ISOLATE, DOMINATE, and TRANSITION. All three components are essential to successful MOUT operations. DOMINATING the urban area is the decisive component of MOUT execution. In order to DOMINATE four FM90-10 conceptual options have been developed that are easily definable and can be easily conceptualized by the operational planner and commander.⁵⁹

1. Retain: A tactical task to occupy and hold a terrain feature to ensure it is free of enemy occupation (FM 101-5-1)
2. Contain: A tactical task to restrict enemy movement. (FM 101-5-1) To stop, hold, or surround the forces of the enemy or to cause the enemy to center activity on a given front and to prevent his withdrawing any part of his forces for use elsewhere. (JP1-02)
3. Deny: Preventing or hindering enemy occupation of, or benefit from, areas or objects having tactical or strategic value. (FM 101-5-1)
4. Reduce: A tactical task to gain control over an enemy position or objective. (FM 101-5-1)

These four conceptual options are very similar to the emerging concepts developing in recent AAN exercises.

There are currently four emerging AAN operational concepts for conducting large-scale joint force combat operations in and around complex terrain. The four operations are: Preclusion/Preemption, Denial, Containment, and Eviction.^{59a} I would like to focus on the most likely option, eviction. Past results of AAN operations indicate that this is still going to be the nature of eviction operations in the future. During the 1997 AAN tactical wargame, there were 230,000 casualties resulting from MOUT operations in Riyadh.⁶⁰

The existing conventional forces and the forces being developed for Force XXI

have demonstrated great capability to be decisive in MOOT operations. If one assumes that a sufficient amount of these forces can deploy quickly enough to the contested complex terrain environment than the other three operational concepts (Preclusion/Preemption, Denial, and Containment) are viable. However, if rapid deployment is not a capability then Eviction operations become the probable course of action. As demonstrated in the AAN wargames, there is a direct correlation between slowness to respond to an urban threat and the difficulty in eventually evicting that same threat. In the future, the commander may need to assess consciously the benefits of entering a minimum capability "early entry force" to deny, preempt, or contain a threat as opposed to waiting to enter a larger follow on force. If a commander were successful in getting his forces into the contested urban terrain before the threat, then the inherent advantages of the defense would probably enable him to defend successfully the urban area with any organic equipment provided his unit has a high level of training. The most stressful of the operations in terms of manpower and equipment is the eviction operation. If eviction operations are to be successful in terms of manpower and equipment, then specialized equipment and training will need to be developed. The MOUT ACTD must be able to identify, develop, and sustain the development of this specialized equipment.

The MOUT doctrine that exists for operations executed below brigade level is assessed to be both complete and current. The two principle doctrinal documents for tactical MOUT operations are FM 90-10-1 An Infantryman's Guide to Combat in Built-up Areas (1993) and MCWP 3-53.3 Military Operations on Urbanized Terrain (MOUT)(1998). Both of these documents incorporate proven historical methods of operations as well as the most current TTPs. The success of the ongoing MOUT ACTD

could impact both of these documents. The MOUT ACTD has embedded in it provisions for the recording of supporting TTPs that are developed while new equipment is being tested during the conduct of the experiment. Both of the manuals may need to be updated upon the completion of the ACTD to incorporate any new TTPs.

One of the greatest challenges facing the commander in prosecuting an operation in an urban environment is the challenge to limit collateral damage. The use of the term "Precision MOUT" gives the commander the ability to use precise, disciplined fires to minimize the risk to non-combatants and limit collateral damage. It is U.S. policy to limit the amount of collateral damage whenever possible. With this policy in mind, historically, the U.S. has initially entered into urban operations with restrictive rules of engagement (ROE) in order to reduce the amount of collateral damage. Unfortunately, this policy in minimizing collateral damage is very hard to execute, and is usually disregarded when U.S. infantry losses begin to increase. There are many historical examples that support this escalation in collateral damage.

At the Battle of Manila in 1945, after suffering increasingly more and more infantry casualties during the opening days of fighting, artillery and air restrictions were lifted. Even though General MacArthur had prohibited the use of such weapons prior to the battle. The city of Manila was completely destroyed and an estimated 100,000 Filipino casualties resulted.⁶¹

Prior to Marines entering into Seoul in 1952, there was a restrictive ROE in place to limit the amount of collateral damage. No non-observable artillery missions were allowed along with any close air support during the Seoul takedown. Once again these restrictions were lifted due to the nature of the stiff resistance and increasing U.S.

casualties. This resulted in thousands of South Korean civilian casualties and the city suffering considerable damage.⁶²

More recently during the failed attempt to capture General Mohammed Farah Aided, during Operation RESTORE HOPE, the U.S. abandoned its restrictive ROE in order to prevent further loss of U.S. special operation forces. U.S. forces were allowed to fire less discriminatly at Somali gunmen resulting in increased civilian casualties.⁶³

The MOUT ACTD initiative can probably make its greatest contribution in this area of reducing collateral damage. The commander may actually be able to achieve that precarious balance of accomplishing the mission while minimizing collateral damage in the urban environment. In the area of force protection the individual infantryman is going to be potentially more survivable due to the enhancements in body armor and ballistic shields. This loss of life will reduce the pressure on the commander to escalate the use firepower. Additionally, less civilian casualties will be incurred due the use of non-lethal weapons, more accurate target discrimination, and smart munitions.

Conclusion

The conduct of U.S. forces when operating in a MOUT environment is critical to future National Security objectives. The United States, undoubtedly, will be involved in Stability and Support operations in the future. These types of operations are typically found in developing countries where urbanization is occurring at an alarming rate. Currently, the application of military force in built-up areas to support a "foreign policy objective", involves risks.

The risk to U.S. soldiers is that they will become involved in an operation for which they are unprepared militarily and suffer needless casualties, similar to Mogadishu.

The risk to U.S. foreign policy is a loss of influence due to an unsuccessful stability and support operation. Currently, U.S. soldiers lack the training, doctrine, and equipment to dominate in a MOUT environment and, therefore, can not fully support the national security objectives in a MOUT environment.

The 1994 DSB Task Force on MOBA recommended treating MOBA as a system. The DSB envisioned the MOBA ACTD (see page 9) to be the integrator for existing and new technologies, the urban database, MOBA analysis center, and MOBA simulation center. The recommendation to establish a MOUT ACTD was acted upon by the Department of Defense in 1997.

The 1997 MOUT ACTD did not fully incorporate all the elements recommended by the DSB. Noticeably absent from the 1997 MOUT ACTD, were the urban database and the MOBA simulation center (figure 6). Both of these elements are critical to maximizing U.S. capabilities in an urban environment.

The Simulation Center would provide the means to evaluate emerging MOUT concepts, especially at the operational level of war where MOUT doctrine is currently the weakest. With the advancement of distributed simulation capability, the actual location of the simulation center becomes less important. In fact, there would be advantages to locating parts of it at Ft. Benning, Ft. Leavenworth, and the designated Urban Warfare Training Center.⁶⁴

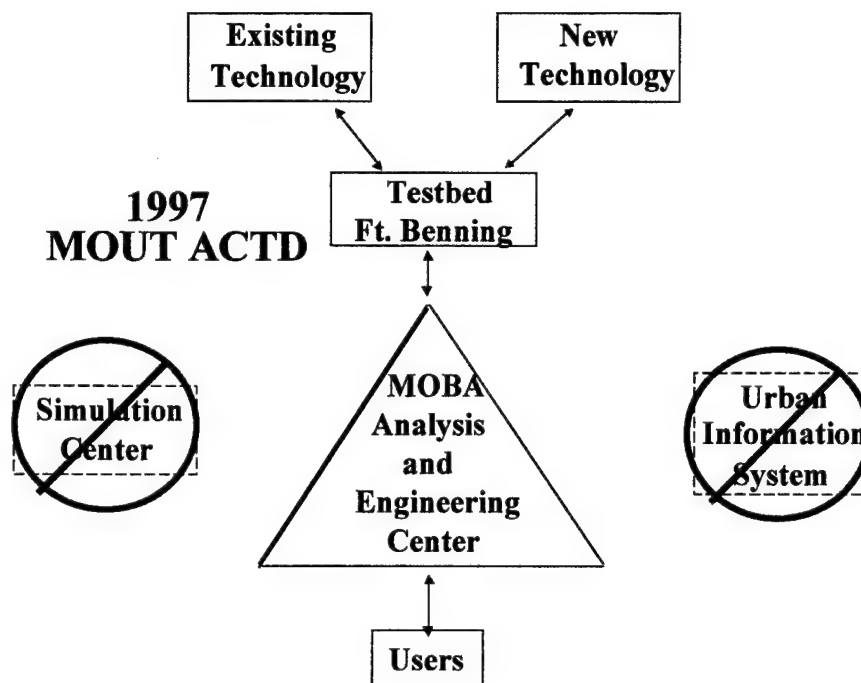


Fig. 6. Actual 1997 MOUT ACTD system

The Urban Database would serve as a repository of information that a military planner could access on short notice to develop IPB and battlefield environment. The DSB recommended that the Defense Intelligence Agency (DIA) would be responsible for the initial establishment and subsequent upkeep of the database. The information contained in the database would include: biographical intelligence, engineering intelligence, institutional services, demographic and social data, cultural and anthropological data, political and administrative data, cartographic and attitudinal data.⁶⁵ To maximize the effectiveness of the database, its use should be incorporated into all levels of the current military education system, from Basic Noncommissioned Officer schools through Senior Service College and always during any operation involving urban areas.

The development of MOUT training is not keeping pace with the development of

MOUT technology/equipment. The senior Army leadership is aware of this problem as evidenced by the CSA's request to the Army staff to assess current MOUT resource requirements.

There are numerous Army installations with outdated MOUT facilities that can not support today's training devices. They are either not large enough, or cannot support combined arms MOUT operations. These facilities have become obsolete and, therefore, are underutilized or worse yet, not utilized at all. If one subscribes to the idea that, "Army unit's fight as they have trained," then realistically, better MOUT facilities are imperative.

Increasing the amount and quality of MOUT facilities is not, in and of itself, going to maximize the training effect. MOUT skills are very perishable and, therefore, must be trained on frequently. The training requirements for units with potential MOUT missions need to be updated.

The 1997 MOUT ACTD's focus on developing existing technologies to meet MOUT operational requirements is only a very short-term solution. The MOUT ACTD will complete its work by 1999 with selected technologies to be supported for only two additional years. There is currently no plan for a continuous research and development program for developing future MOUT applicable technologies. Without a program to continuously develop emerging technologies, then MOUT equipment will lag behind its MOOT counterpart. It may even be more cost effective to resource a small, continuous, MOUT specific research and development organization as opposed to the large, periodic ACTDs.

The MOUT ACTD is currently ongoing, and the final success rate of the tested

initiatives can not be determined. The ACTD has progressed far enough to be able to present some emerging results. The general success rate for the ACTD selected technologies appears to be less than fifty percent. Those that have been successful should be developed and fielded as soon as possible. The Rafael Dimon Breaching launcher system proved so successful during testing that it has been selected for expedited fielding to Army units. This identification of a MOUT shortcoming and the relatively quick technological response to alleviate the shortcoming is all that can be expected from current MOUT initiatives. By 2005, the Army will not have maximized its current MOUT initiatives, due to a lack of ability to develop to tackle the tough problems of MOUT training and MOUT doctrine.

An important implication of this monograph is that the U.S. military may find itself unprepared to dominate in its next potential major conflict. U.S. foreign policy will, therefore, be at risk. The MOUT ACTD initiative will produce some technological advances in MOUT capability but, over all, MOUT preparedness will be limited by our inadequate MOUT training and MOUT doctrine.

Recommendations

The recommendations of the 1994 DSB Task Force on MOBA are still applicable today. Therefore, the first step in improving MOUT capabilities would be to resource the specific recommendations of the 1994 Task Force. In order to facilitate the movement of resources toward improving MOUT capabilities, someone, or some organization, must step forward and take the impetus.

Unfortunately, no person or organization has stepped forward as the "champion" for MOUT. There are a number of reasons for this. One of the primary reasons is that

there are no “big ticket” items for MOUT; therefore, there are no defense contractors supporting it. In fact, MOUT is probably seen as the enemy to those developing open terrain weapon systems. MOUT is definitely not the preferred conflict environment for the maneuver theorist. Secondly, two major services (Air Force, Navy) are struggling to find missions that contribute significantly to the MOUT environment. It is hard to increase a service budget when a group cannot show that it may have a significant role in the next potential conflict. For both of these reasons, the “Champion” of MOUT has to be someone who can convince policymakers that there is a need for improved MOUT capability. He also has to be able to redirect the Army’s institutional focus from MOOT to MOUT either by his position or influence.

The current MOUT ACTD will be completed by 4th quarter 1999. There will be some technologies that are selected for interim fielding and supported for two years. Concurrently, the Force XXI Advanced Warfighting Experiment for light forces is scheduled for 2001. The likelihood of MOUT being the focus of the AWE is slim and it’s even less likely that MOUT ACTD equipment will be utilized. The AWE will definitely not employ any of the concepts for MOUT at the operational level of war. A MOUT AWE, scheduled in the 2002-2003 timeframe, would enable the results of the Force XXI (light) to be acted upon. Additionally, the MOUT ACTD equipment and doctrine may be beginning to materialize through the Army’s field units and leadership schools. By waiting until 2002-2003 the Army will also be able to analyze the results of the Marines’ Urban Warrior exercise (MOUT AWE).

The third recommendation is to improve current MOUT training facilities. The improvement of training facilities and a corresponding increase by commanders to focus

training on MOUT could, in and of itself, pay great dividends. Better MOUT training facilities across the Army will improve the unit's performance when training at the "Urban Warfare Training Center." The phrase, "If you build it, they will come," aptly describes the unit's propensity to train on the most realistic and demanding training facility.

The fourth recommendation is the establishment of an urban CTC. The corresponding NTC, JRTC, and CMTC have become the vehicles in which the units train against a high quality opposing force. The CTCs also serve as the test bed for emerging doctrine and new equipment.

The fifth recommendation is the establishment of the urban information system/database and the urban simulation center. Both of these projects will take many years to develop, therefore, it is imperative that seed money be spent to develop these capabilities sooner than later.

Considerable effort and resources have been expended on the Army After Next project. In the conduct of the AAN wargames, urban conflict has proven to be a very difficult military and political situation to resolve. MOUT focused AAN workshops and wargames have been conducted to help develop concepts for 2020 urban warfare. It is apparent to those involved in AAN that the question of urban conflict has changed; it is not a question of if it will happen, but when it will happen. Thus, the importance of preparing for potential urban conflicts must be transferred from the "AAN world" to today.

Appendix I: ACTD Results

DSB Requirement	ACTD Requirement	ACTD Initiative	Status
	Remote Marking Capability	R8: Remote Marking	
	Knee/elbow/joint protection	R12: Joint Protection	Successful
	Smaller, lighter disposable NBC mask for dust, smoke, RCAs	R13 Lightweight Mask	Unsuccessful
Training ammunition, including paint rounds	Non-lethal blunt training round	R31 Non-lethal blunt training round	
	Improved Obscurant	R26: Improved Obscurant	Unsuccessful
	Man-portable protective shield	R10: Man-portable shield	Unsuccessful
Custom demolitions to blow holes in walls	Non-explosive breach capability	R30: Door and Window Breaching Devices	Successful
	Personal protection kit	R14: Personal protection kit	Eye: Unsuccessful Cut: Successful
	Hearing protection	R15: Hearing protection	Unsuccessful
	Soft Round	R24: Soft Round	Pending lab analysis
	Improved Personnel Restraints	R35: Flexible Cuffs	Successful
	Stun grenade, "Stingball" grenade	R34: Stun Grenade	3 - 28 Aug '98
Combat ID of individuals	Ability to clearly mark all friendlies	R11: Clearly Mark all friendlies	3 - 28 Aug '98
Hands-off ICS/non-LOS	Communications inside buildings	R3: Hands-free NLOS communication	9 Sep - 3 Oct '98
	Effective telemedicine system for MOUT	R42: Casualty evacuation	9 Sep - 3 Oct '98
Virtual reality mission planner, rehearsal devices	Rapidly transportable virtual mission planning	R40: Mission Planning/Virtual Rehearsal Tools	12 - 20 Nov '98
Custom demolitions to blow holes in walls	Ability to blow man-size hole in concrete	R27: Blow man-size hole in concrete	Dec '98

	Point Munition for individual soldier	R37: Point Munition	Dec '98
	Powered Optics for all weapons	R2: Powered Optics	1 - 30 Jan '99
Sensors to hear and see through walls	Through-wall sensor	R7: Through wall sensor	1 - 30 Jan '99
	Remote Marking Capability	R8: Remote marking(revisit)	1-21 Feb '99
	Intelligence Collection & Dissemination	R5: Intelligence Collection & Dissemination	1-21 Feb '99
	Hands-free sling	R21: Improved Weapons sling	1-21 Feb '99
	Improved Obscurant	R26: Improved Obscurant (revisit)	1-21 Feb '99
Rapid map generators	Produce/Update Maps	R4: Produce/Update Maps	1-30 Apr '99
Improved night vision devices not degraded by illumination	Ability for all personnel to see in buildings at all times	R6: Night Vision/Light Source	1-30 Apr '99
Detect and neutralize snipers, mines, booby traps, MANPADS	Location of sniper and small arms fire	R33: Sniper Detection	1-30 Apr '99
Improved laser designators & munitions	Small, lightweight common target designator	R36: Hand Held Target designator	1-30 Apr '99
Combat ID of individuals	ID & discriminate friendly/enemy & combatants, non-combatants	R1: ID friendly, enemy, non-combatants	1-21 May '99
Improved non-LOS soldier to leader radio	Communications inside buildings	R3: Hands-free NLOS communication(revisit)	1-21 May '99
	Smaller, lighter disposable NBC mask for dust, smoke, RCAs	R13: Lightweight Mask (revisit)	1-21 May '99
	Individual mobility - quick roof access	R28: Get on top of building	1-21 May '99
Improved situational awareness	Position/location in building	R41: Position in Building	1-21 May '99

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- ² "Military Operation in Urban Terrain, Advanced Concept Technology Demonstration, Program Overview," available from, <http://mout.actd.org/overview> last revised 15 January 1998
- ³ *ibid.*
- ⁴ Robert L. O'Connell, *AAN MOUT/MOBA White Paper PR# C500-98-00*, National Ground Intelligence Center (NGIC), 20 February 1998, pg. 13.
- ⁵ *ibid.*, 15.
- ⁶ Wright, 1997, 361.
- ⁷ Wright, 1997, 361.
- ⁸ O'Connell 1998, 15.
- ⁹ O'Connell 1998, 19.
- ¹⁰ Conclusion statements from Department of Defense. Office of the Secretary of Defense. *Report of the Defense Science Board Task Force on Military Operations in Built-up Areas (MOBA)*. Washington D.C. 1994, cover sheet.
- ¹¹ Office of the Secretary of Defense. *Report of the Defense Science Board Task Force on Military Operations in Built-up Areas (MOBA)*. Washington D.C. 1994, 19.
- ¹² The diagram of the MOBA system from Office of the Secretary of Defense. *Report of the Defense Science Board Task Force on Military Operations in Built-up Areas (MOBA)*. Washington D.C. 1994, 2.
- ¹³ Recommendations taken from Office of the Secretary of Defense. *Report of the Defense Science Board Task Force on Military Operations in Built-up Areas (MOBA)*. Washington D.C. 1994, 3.
- ¹⁴ Historical chronology of Chechen conflict from Timothy L. Thomas "Air Operations in Low Intensity Conflict: The Case of Chechnya." *Airpower Journal* (Winter 1997) 52.
- ¹⁵ Chechen strategy from Timothy L. Thomas, Chechnya: The Russian Armed Forces Confront Chechnya, Military-Political Aspects and Military Activities 11-31 December 1994." *The Journal of Slavic Military Studies* (June 1995) 274.
- ¹⁶ Andrei Reavsky "CHECHNYA: Russian Military Performance in Chechnya: An Initial Evaluation." *The Journal of Slavic Military Studies*, (December 1995) 682.
- ¹⁷ Timothy L. Thomas, "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya III. The Battle for Grozny, 1-26 January 1995" *The Journal of Slavic Military Studies*, March 1997, 58.
- ^{17a} Reavsky, *Russian Military Performance in Chechnya*, 685.
- ¹⁸ *Ibid.*, 685-686.

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²⁰ Center for Army Lessons Learned (CALL), Operation Just Cause Lessons Learned, Volume I. Soldiers and Leadership, (US Army Combined Arms Command (CAC) Ft. Leavenworth, KS October 1990), I-5.

²¹ Events leading up to Operation JUST CAUSE from CALL 90-9, Vol I, front cover.

²² CALL 90-9, Vol I, I-5.

²³ Chronology of key events from CALL 90-9, Vol I, back cover.

²⁴ Thomas Donnelly, Margaret Roth, Caleb Baker, Operation Just Cause. The Storming of Panama, (Lexington Books, New York, 1991) 374.

²⁵ Chronology dates taken from Center for Army Lessons Learned (CALL), Lessons Learned Report, U.S. Operations in Support of UNISOM II 4 May 1993 - 31 March 1994, Ft Leavenworth Kansas, 3.

²⁶ Rick Atkinson, "Night of a Thousand Casualties," The Washington Post 31 January 1994, A1

²⁷ Ibid.

²⁸ The Somali militiamen operations taken from Atkinson, 31 January 1994, A1.

²⁹ Ibid., A11.

³⁰ Ibid., A12

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³⁴ Report of the Defense Science Board (DSB) Task Force on Military Operations in Built-up Areas (MOBA), November 1994, 23

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³⁶ Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Command (CAC), Newsletter (MOUT) Ft Leavenworth Kansas.

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³⁸ Paragraph summarized from Report of the Defense Science Board (DSB) Task Force on Military Operations in Built-up Areas (MOBA), November 1994, 27

³⁹ CALL, Lessons Learned Report, UNISOM II 4 May 1993 - 31 March 1994, I-8-4.

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⁴³ CALL 90-9, Vol II, II-11.

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